Contents of Volume 63

NO. 1. JANUARY 1990

Characteristics of Background and Evoked Discharges of Multireceptive Neurons in Lumbar Spinal Cord of Cat
W. M. Steedman and S. Zachary 1

N-Methyl-D-Aspartate Receptors of Ganglion Cells in Rabbit Retina
S. C. Massey and R. F. Miller 16

Diaphragmatic and External Intercostal Muscle Control During Vomiting: Behavior of Inspiratory Bulbospinal Neurons
A. D. Miller, S. Nonaka, S. F. Lakos, and L. K. Tan 31

Visual Motion Response Properties of Neurons in Dorsolateral Pontine Nucleus of Alert Monkey
D. A. Suzuki, J. G. May, E. L. Keller, and R. D. Yee 37

Effects of Excitatory Amino Acid Antagonists on Synaptic Responses of Supraoptic Neurons in Slices of Rat Hypothalamus
V. K. Gribkoff and F. E. Dudek 60

Characterization of an Early Afterhyperpolarization After a Brief Train of Action Potentials in Rat Hippocampal Neurons In Vitro
A. Williamson and B. E. Alger 72

Functional Reorganization of Primary Somatosensory Cortex in Adult Owl Monkeys After Behaviorally Controlled Tactile Stimulation
W. M. Jenkins, M. M. Merzenich, M. T. Ochs, T. Allard, and E. Guíc-Robles 82

Dissection of the Neuron Network in the Catfish Inner Retina. IV. Bidirectional Interactions Between Amacrine and Ganglion Cells
H. M. Sakai and K.-I. Naka 105

Dissection of the Neuron Network in the Catfish Inner Retina. V. Interactions Between NA and NB Amacrine Cells
H. M. Sakai and K.-I. Naka 120

Neural Maps of Head Movement Vector and Speed in the Optic Tectum of the Barn Owl
S. Du Lac and E. I. Knudsen 131

Pharmacologic Analysis of Inhibition Produced by Last-Order Intermediate Nucleus Interneurons Mediating Nonreciprocal Inhibition of Motoneurons in Cat Spinal Cord
P. Rudomin, I. Jiménez, J. Quevedo, and M. Solodkin 147

Kinesthetic Control of a Multijoint Movement Sequence
P. J. Cordo 161

G Protein is Coupled to Presynaptic Glutamate and GABA Receptors in Lobster Neuromuscular Synapse
A. Miwa, M. Ui, and N. Kawai 173

Synaptic Transmission Between Rat Inferior Olivary Neurons and Cerebellar Purkinje Cells in Culture
T. Hirano 181

Changes in Muscle Stiffness Produced by Motor Units of Different Types in Peroneus Longus Muscle of Cat
J. Petit, G. M. Filippi, F. Emonet-Dénand, C. C. Hunt, and Y. Laporte 190

Transmission at a Central Inhibitory Synapse. IV. Quantal Structure of Synaptic Noise
H. Korn and D. S. Faber 198

LETTER TO THE EDITOR
Transient and Prolonged Effects of Acetylcholine on Responsiveness of Cat Somatosensory Cortical Neurons
R. Dykes, R. Metherate, and W. Tremblay 223

NO. 2. FEBRUARY 1990

Role of Na-K Pump Potassium Regulation and IPSPs in Seizures and Spreading Depression in Immature Rabbit Hippocampal Slices
M. M. Haglund and P. A. Schwartzkroin 225
Effects of Midbrain and Medullary Stimulation on Spinomesencephalic Tract Cells in the Cat
R. P. Yezierski 240
Functional Properties of Afferent Fibers Supplying Reproductive and Other Pelvic Organs in Pelvic Nerve of Female Rat
K. J. Berkley, H. Hotta, A. Robbins, and Y. Sato 256
Low- and High-Voltage-Activated Calcium Currents in Rat Spinal Dorsal Horn Neurons
P. D. Ryu and M. Randic 273
Location and Morphology of Dorsal Spinocerebellar Tract Neurons That Receive Monosynaptic Afferent Input From Ankle Extensor Muscles in Cat Hindlimb
B. Walmsley and M. J. Nicol 286
Synchronized Discharge of Taste Neurons Recorded Simultaneously in Rat Parabrachial Nucleus
S. Yamada, T. Ohshima, H. Oda, M. Adachi, and T. Satoh 294
Mormyromast Electroreceptor Organs and Their Afferent Fibers in Mormyrid Fish. II. Intra-Axonal Recordings Show Initial Stages of Central Processing
C. C. Bell 303
Mormyromast Electroreceptor Organs and Their Afferent Fibers in Mormyrid Fish. III. Physiological Differences Between Two Morphological Types of Fibers
C. C. Bell 319
Voltage Behavior Along the Irregular Dendritic Structure of Morphologically and Physiologically Characterized Vagal Motoneurons in the Guinea Pig
R. Nitzan, I. Segev, and Y. Yarom 333
Dependence of Retinogeniculate Transmission in Cat on NMDA Receptors
A. M. Sillito, P. C. Murphy, T. E. Salt, and C. I. Moody 347
An Iontophoretic Analysis of the Pharmacologic Mechanisms Responsible for Trigeminal Motoneuronal Discharge During Masticatory-Like Activity in the Guinea Pig
N. Katakura and S. H. Chandler 356
Characterization of Ca Current Underlying Burst Formation in Lobster Cardiac Ganglion Motorneurons
K. Tazaki and I. M. Cooke 370

NO. 3. MARCH 1990

Different Responses of CA1 and CA3 Regions to Hypoxia in Rat Hippocampal Slice
K. Kawasaki, S. F. Traynelis, and R. Dingledine 385
Recurrent Inhibition to and From Motoneurons Innervating the Flexor Digitorum and Flexor Hallucis Longus Muscles of the Cat
T. M. Hamm 395
Modulation by a Moving Texture of Cat Area 18 Neuron Responses to Moving Bars
B. Gulyás, W. Spileers, and G. A. Orban 404

Ascending Pathways in the Spinal Cord Involved in the Activation of Subnucleus Reticularis Dorsalis Neurons in the Medulla of the Rat
Z. Bing, L. Villanueva, and D. Le Bars 424
Triggering of Preprogrammed Movements as Reactions to Masked Stimuli
J. L. Taylor and D. I. McCloskey 439
Response Similarity to Odors in Olfactory Bulb Output Cells Presumed to be Connected to the Same Glomerulus: Electrophysiological Study Using Simultaneous Single-Unit Recordings
N. Buonviso and M. A. Chaput 447
Movement-Related Phasic Muscle Activation. I. Relations With Temporal Profile of Movement
S. H. Brown and J. D. Cooke 455
Movement-Related Phasic Muscle Activation. II. Generation and Functional Role of the Triphasic Pattern
J. D. Cooke and S. H. Brown 465
The Spino(Trigemino)pontoamygdaloid Pathway: Electrophysiological Evidence for an Involvement in Pain Processes
J. F. Bernard and J. M. Besson 473
Voltage-Clamp Analysis of Posttetanic Potentiation of the Mossy Fiber to CA3 Synapse in Hippocampus
W. H. Griffith 491
Effect of Passive Eye Position Changes on Retinogeniculate Transmission in the Cat
R. Lal and M. J. Friedlander 502
Effect of Passive Eye Movement on Retinogeniculate Transmission in the Cat
R. Lal and M. J. Friedlander 523
Premotor Neurons B51 and B52 in the Buccal Ganglia of *Aplysia californica:* Synaptic Connections, Effects on Ongoing Motor Rhythms, and Peptide Modulation
M. R. Plummer and M. D. Kirk 539
Responses of Nociceptive SI Neurons in Monkeys and Pain Sensation in Humans Elicited by Noxious Thermal Stimulation: Effect of Interstimulus Interval
E. H. Chudler, F. Anton, R. Dubner, and D. R. Kenshalo, Jr. 559
Binaural Interaction in High-Frequency Neurons in Inferior Colliculus of the Cat: Effects of Variations in Sound Pressure Level on Sensitivity to Interaural Intensity Differences
D. R. F. Irvine and G. Gago 570
Dopamine Neurons of the Monkey Midbrain: Contingencies of Responses to Active Touch During Self-Initiated Arm Movements
R. Romo and W. Schultz 592
Dopamine Neurons of the Monkey Midbrain: Contingencies of Responses to Stimuli Eliciting Immediate Behavioral Reactions
W. Schultz and R. Romo 607
Organizing Principles for Single Joint Movements. III. Speed-Insensitive Strategy as a Default
G. L. Gottlieb, D. M. Corcos, G. C. Agarwal, and M. L. Latash 625
Slow Excitatory Amino Acid Receptor-Mediated Synaptic Transmission in Turtle Cerebellar Purkinje Cells
L. J. Larson-Prior, D. R. McCrimmon, and N. T. Slater 637

NO. 4. APRIL 1990

Synaptic and Intrinsic Control of Membrane Excitability of Neostriatal Neurons I. An In Vivo Analysis
P. Calabresi, N. B. Mercuri, A. Stefani, and G. Bernardi 651

Synaptic and Intrinsic Control of Membrane Excitability of Neostriatal Neurons II. An In Vitro Analysis
P. Calabresi, N. B. Mercuri, and G. Bernardi 663
Visual Tracking in Monkeys: Evidence for Short-Latency Suppression of the Vestibuloocular Reflex
S. G. Lisberger 676
Gustatory Responses of Single Neurons in the Insula of the Macaque Monkey
S. Yaxley, E. T. Rolls, and Z. J. Sienkiewicz 689
Synapsin I Injected Presynaptically Into Goldfish Mauthner Axons Reduces Quantal Synaptic Transmission
J. T. Hackett, S. L. Cochran, L. J. Greenfield, Jr., D. C. Brosius, and T. Ueda 701
Responses From Parabrachial Gustatory Neurons in Behaving Rats
H. Nishijo and R. Norgren 707
Transient Potassium Currents in Avian Sensory Neurons
S. K. Florio, C. D. Westbrook, M. R. Vasko, R. J. Bauer, and J. L. Kenyon 725
Progressive Potentiation of Peptide Release During a Neuronal Discharge
K. J. Loechner, E. M. Azhderian, R. Dreyer, and L. K. Kaczmarek 738
High-Frequency Oscillations as Indicators of Neural Control Mechanisms in Human Respiration, Mastication, and Speech
A. Smith and M. Denny 745
Characteristics of A- and C-Fibers Ending in a Sensory Nerve Neuroma in the Rat
E. Welk, J. D. Leah, and M. Zimmermann 759
The Vestibular Nerve of the Chinchilla. III. Peripheral Innervation Patterns in the Utricular Macula
C. Fernández, J. M. Goldberg, and R. A. Baird 767
The Vestibular Nerve of the Chinchilla. IV. Discharge Properties of Utricular Afferents
J. M. Goldberg, G. Desmadryl, R. A. Baird, and C. Fernández 781
The Vestibular Nerve of the Chinchilla. V. Relation Between Afferent Discharge Properties and Peripheral Innervation Patterns in the Utricular Macula
J. M. Goldberg, G. Desmadryl, R. A. Baird, and C. Fernández 791
Proton-Induced Sodium Current in Frog Isolated Dorsal Root Ganglion Cells
N. Akaike, O. A. Krishtal, and T. Maruyama 805
Visuospatial Coding in Primate Prefrontal Neurons Revealed by Oculomotor Paradigms
S. Funahashi, C. J. Bruce, and P. S. Goldman-Rakic 814
Laminar Analysis of Extracellular Field Potentials in Rat Vibrissa/Barrel Cortex
S. Di, C. Baumgartner, and D. S. Barth 832
Simulation of Motion on the Skin. III. Mechanisms Used by Rapidly Adapting Cutaneous Mechanoreceptors in the Primate Hand for Spatiotemporal Resolution and Two-Point Discrimination
E. P. Gardner and C. I. Palmer 841
Voltage- and Transmitter-Gated Currents in Isolated Rod Bipolar Cells of Rat Retina
A. Karschin and H. Wässle 860
Fourier Analysis of Saccades in Monkeys and Humans
C. M. Harris, J. Wallman, and C. A. Scudder 877
Chemosensitivity of Fine Afferents From Rat Skin In Vitro
E. Lang, A. Novak, P. W. Reeh, and H. O. Handwerker 887
Vertical Eye Movement-Related Secondary Vestibular Neurons Ascending in Medial Longitudinal Fasciculus in Cat. I. Firing Properties and Projection Pathways
Y. Iwamoto, T. Kitama, and K. Yoshida 902
Vertical Eye Movement-Related Secondary Vestibular Neurons Ascending in Medial Longitudinal Fasciculus in Cat. II. Direct Connections With Extraocular Motoneurons
Y. Iwamoto, T. Kitama, and K. Yoshida 918

Selectivity of Cat Area 18 Neurons for Direction and Speed in Depth
W. Spileers, G. A. Orban, B. Gulyás, and H. Maes 936

NO. 5. MAY 1990

Effects of Glycine and GABA on Bulbar Respiratory Neurons of Cat
A. Haji, J. E. Remmers, C. Connelly, and R. Takeda 955
The 15-Lipoxygenase Product, 8R, 15S-diHETE, Stereospecifically Sensitizes C-Fiber Mechanoheat Nociceptors in Hairy Skin of Rat
D. M. White, A. I. Basbaum, E. J. Goetzl, and J. D. Levine 966
Modulation of Spinal Nociceptive Transmission From Nuclei Tractus Solitarii: A Relay for Effects of Vagal Afferent Stimulation
K. Ren, A. Randich, and G. F. Gebhart 971
Computer Study of Presynaptic Inhibition Controlling the Spread of Action Potentials Into Axonal Terminals
I. Segev 987
Retinal Image Motion Alone Does Not Control Disconjugate Postsaccadic Eye Drift
Z. Kapoula, L. M. Optican, and D. A. Robinson 999
Discharge Properties of Single Units in Auditory Part of Reticular Nucleus of Thalamus in Cat
G. M. Simm, F. De Ribaupierre, Y. De Ribaupierre, and E. M. Rouiller 1010
Tonic Descending Influences on Receptive-Field Properties of Nociceptive Dorsal Horn Neurons in Sacral Spinal Cord of Rat
J. M. A. Laird and F. Cervero 1022
Visual-Response Properties of Neurons in Turtle Basal Optic Nucleus In Vitro
A. F. Rosenberg and M. Ariel 1033
Low-Threshold Calcium Current in Isolated Purkinje Cell Bodies of Rat Cerebellum
M. Kaneda, M. Wakamori, C. Ito, and N. Akaike 1046
Acetylcholine-Activated Ionic Currents in Parasympathetic Neurons of Bullfrog Heart
N. Tateishi, D.-K. Kim, and N. Akaike 1052
Proton-Gated Sodium Current in Parasympathetic Ganglion Cells of Frog Heart
D.-K. Kim, N. Tateishi, and N. Akaike 1060
ATP-Induced Current in Isolated Outer Hair Cells of Guinea Pig Cochlea
T. Nakagawa, N. Akaike, T. Kimitsuki, S. Komune, and T. Arima 1068
Activity-Dependent Neuromodulation in *Aplysia* Neuron R15: Intracellular Calcium Antagonizes Neurotransmitter Responses Mediated by cAMP
R. H. Kramer and I. B. Levitan 1075
Mechanism of Potassium Uptake in Neuropile Glial Cells in the Central Nervous System of the Leech
W. A. Wuttke 1089
Muscle Activation Patterns and Kinetics of Human Index Finger Movements
W. G. Darling and K. J. Cole 1098
Phase-Dependent Reflex Reversal in Human Leg Muscles During Walking
J. F. Yang and R. B. Stein 1109
Convergence of Heterotopic Nociceptive Information Onto Neurons of Caudal Medullary Reticular Formation in Monkey (*Macaca fascicularis*)
L. Villanueva, K. D. Cliffer, L. S. Sorkin, D. Le Bars, and W. D. Willis, Jr. 1118
Determinants of Horizontal Sound Location Selectivity of Binaurally Excited Neurons in an Isofrequency Region of the Mustache Bat Inferior Colliculus
Z. M. Fuzessery, J. J. Wenstrup, and G. D. Pollak 1128
Insights Into Associative Long-Term Potentiation From Computational Models of NMDA Receptor–Mediated Calcium Influx and Intracellular Calcium Concentration Changes
W. R. Holmes and W. B. Levy 1148

Recordings From Cat Trapezoid Body and HRP Labeling of Globular Bushy Cell Axons
G. A. Spirou, W. E. Brownell, and M. Zidanic 1169
The Representations of the Steady-State Vowel Sound /ɛ/ in the Discharge Patterns of Cat Anteroventral Cochlear Nucleus Neurons
C. C. Blackburn and M. B. Sachs 1191
Receptive-Field Changes Induced by Peripheral Nerve Stimulation in SI of Adult Cats
G. H. Recanzone, T. T. Allard, W. M. Jenkins, and M. M. Merzenich 1213
Paired Individual and Mean Postsynaptic Currents Recorded in Four-Cell Networks of *Aplysia*
D. Gardner 1226
Visual Responses of Purkinje Cells in the Cerebellar Flocculus During Smooth-Pursuit Eye Movements in Monkeys. I. Simple Spikes
L. S. Stone and S. G. Lisberger 1241
Visual Responses of Purkinje Cells in the Cerebellar Flocculus During Smooth-Pursuit Eye Movements in Monkeys. II. Complex Spikes
L. S. Stone and S. G. Lisberger 1262
Announcements 1276

NO. 6. JUNE 1990

Behaviorally Contingent Property of Movement-Related Activity of the Primate Putamen
M. Kimura 1277
Dynamic Response of Human Muscle Spindle Afferents to Stretch
B. B. Edin and Å. B. Vallbo 1297
Muscle Afferent Responses to Isometric Contractions and Relaxations in Humans
B. B. Edin and Å. B. Vallbo 1307
Classification of Human Muscle Stretch Receptor Afferents: A Bayesian Approach
B. B. Edin and Å. B. Vallbo 1314
Tactile Detection of Slip: Surface Microgeometry and Peripheral Neural Codes
M. A. Srinivasan, J. M. Whitehouse, and R. H. LaMotte 1323
Origin of Negative Potentials in the Light-Adapted ERG of Cat Retina
L. J. Frishman and R. H. Steinberg 1333
Neurotransmitter Receptors Mediating Excitatory Input to Cells in the Cat Lateral Geniculate Nucleus. I. Lagged Cells
P. Heggelund and E. Hartveit 1347
Neurotransmitter Receptors Mediating Excitatory Input to Cells in the Cat Lateral Geniculate Nucleus. II. Nonlagged Cells
E. Hartveit and P. Heggelund 1361
Concentration-Jump Experiments With NMDA Antagonists in Mouse Cultured Hippocampal Neurons
M. Benveniste, J.-M. Mienville, E. Sernagor, and M. L. Mayer 1373
Catecholaminergic Effects on Neuronal Activity Related to a Delayed Response Task in Monkey Prefrontal Cortex
T. Sawaguchi, M. Matsumura, and K. Kubota 1385
Effects of Dopamine Antagonists on Neuronal Activity Related to a Delayed Response Task in Monkey Prefrontal Cortex
T. Sawaguchi, M. Matsumura, and K. Kubota 1401
Pharmacology of the Myogenic Heart of the Pond Snail *Lymnaea stagnalis*
K. J. Buckett, G. J. Dockray, N. N. Osborne, and P. R. Benjamin 1413
Regulation of Heartbeat in *Lymnaea* by Motoneurons Containing FMRFamide-Like Peptides
K. J. Buckett, M. Peters, G. J. Dockray, J. Van Minnen, and P. R. Benjamin 1426

Excitation and Inhibition of the Heart of the Snail, *Lymnaea*, by Non-FMRFamidergic Motoneurons
K. J. Buckett, M. Peters, and P. R. Benjamin 1436
Single-Unit Selectivity to Azimuthal Direction and Sound Pressure Level of Noise Bursts in Cat High-Frequency Primary Auditory Cortex
T. J. Imig, W. A. Irons, and F. R. Samson 1448
Monosynaptic and Dorsal Root Reflexes During Locomotion in Normal and Thalamic Cats
S. H. Duenas, G. E. Loeb, and W. B. Marks 1467
Efferent Neurons and Suspected Interneurons in S-1 Forelimb Representation of the Awake Rabbit: Receptive Fields and Axonal Properties
H. A. Swadlow 1477
Neuropeptide Y Reduces Calcium Current and Inhibits Acetylcholine Release in Nodose Neurons Via a Pertussis Toxin–Sensitive Mechanism
J. W. Wiley, R. A. Gross, Y. Lu, and R. L. Macdonald 1499
Dynamic Analysis of Sensory-Inhibitory Interactions in Crayfish Stretch Receptor Neurons
L. C. Barrio and W. Buño 1508
Temporal Correlations in Sensory-Synaptic Interactions: Example in Crayfish Stretch Receptors
L. C. Barrio and W. Buño 1520
Selectivity for Orientation and Direction of Motion of Single Neurons in Cat Striate and Extrastriate Visual Cortex
M. S. Gizzi, E. Katz, R. A. Schumer, and J. A. Movshon 1529
Announcements 1544
Subject Index to Volume 63 1545
Author Index to Volume 63 1553